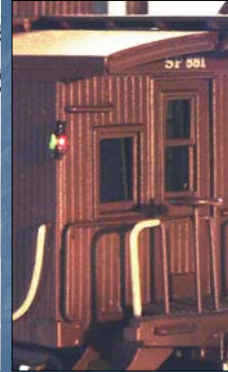


45° Marker Lights

- Prototype for:
 - Southern Pacific
 - Union Pacific
 - Santa Fe



Prototype



Model

Parts Needed

Miniatronics 1.5v 20ma axial bulbs (18-075-10)
Detail Associates .012" brass wire (WR2404)
.005 clear colored Mylar (red, green, yellow)
– Tap Plastics
#52 drill and steel plate
Evercoat catalyzed putty – any good auto paint store
Single ply toilet paper – separate normal 2-ply
Epoxy – 5 minute and 2-Ton
ACC

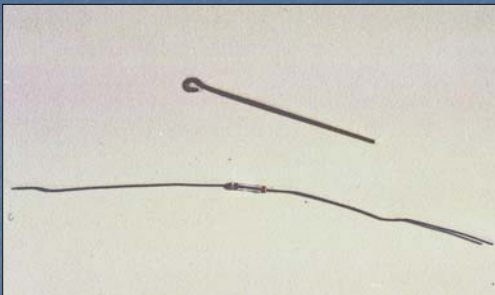
Micro Modeling

- Modeling needs to be done under magnification – 2x to 5x



Optivisor

Make the Mounting Bracket



Make an eye in the .012 inch brass wire that will just fit over the Miniatronics 1.5 v axial bulb.

Connect the Bracket Wire



Slip the eye over the bulb and ACC in place. Be sure the eye is at least .040 below the bulb filament.

Insulate the Bulb Wires



Coat the wires of the axial bulb with 5 minute epoxy. Work the drops out until the glue sets as in the right picture.

Form the Bulb Wires



Form the epoxy coated wires as shown.

Build the Marker Base



Build the base with Evercoat catalyzed putty as shown

Finish the Marker Base



File the hardened putty to form a round flat base. Be sure not to file through the wire.

Build the Marker Top



Apply single ply toilet paper over the top of the bulb that has been coated with 5 minute epoxy.

Build the Marker Top



Wrap the top of the bulb as tight as possible with single ply toilet paper to a thickness as shown. Be sure the paper is well impregnated with epoxy.

Finish the Marker Top Base



File the single ply toilet paper round. The top should have a cone and be filed flat until the wire just shows.

Make the Lens



Make a punch from a #52 drill. The die is a piece of steel drilled with the #52 Drill. File the back of the #52 drill flat.

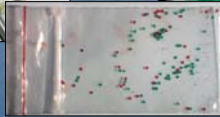
Punch the Lens



Setup the Punch



Punch the Lens



Bag of Punched Lens

Install the Lens



Coat the top with 2-Ton epoxy. Light the bulb and insure the filament is centered in the middle of each lens as you install it.

Finish Installing the Lens



Install the rest of the lens. Be sure they are positioned so the bracket is at 45° and the red lens faces to the rear. Install a lens for the top vent.

Bundle the Bracket Wires



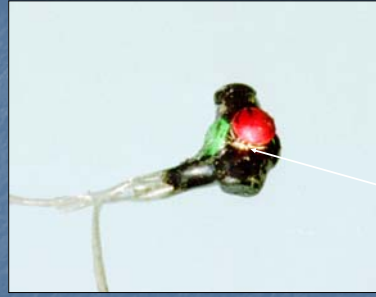
Form the two bulb wires and the bracket wire into a tight bundle and epoxy together with 5 minute epoxy.

Paint the Marker



Cover the entire marker with black paint. Light the bulb to be sure there are no light leaks.

Finish the Marker



Paint light
Leaks

Scrape the paint off the lens. You want to scratch the lens surface to diffuse the light. The marker is ready to install.

The End

